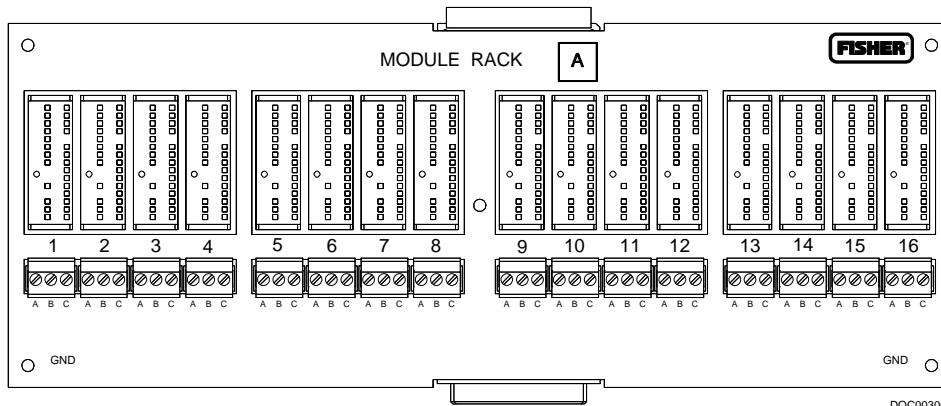
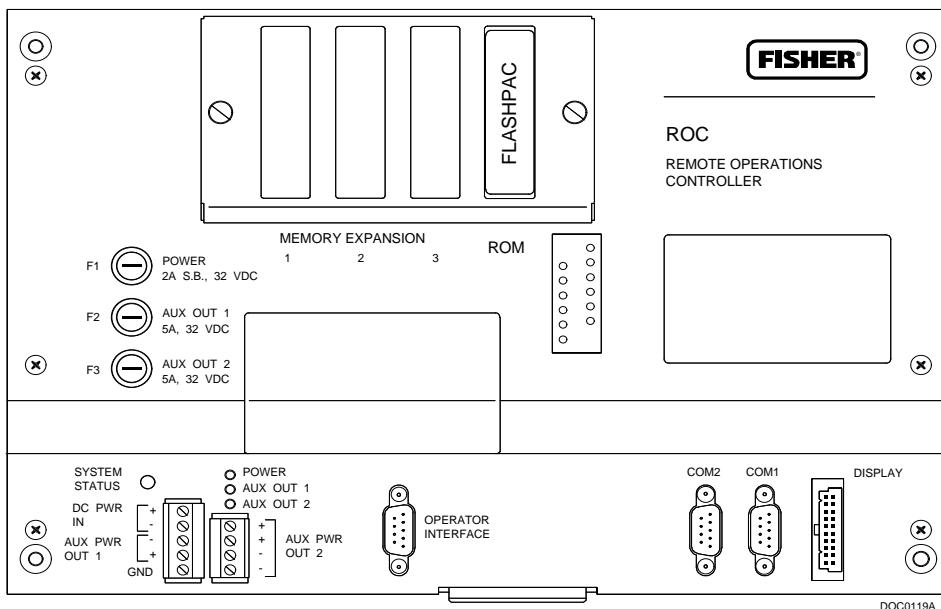


## Specification Sheet

# ROC364 Remote Operations Controller

The ROC364 Remote Operations Controller (ROC) is a microprocessor-based controller that provides the functions required for a variety of field automation applications. The unit is used primarily where there is a need to monitor, measure, and control equipment remotely. The unit is ideal for applications requiring flow computation, PID control, and logic/sequencing control. It is available with a FlashPAC memory module.

The ROC364 features modular, single-point I/O. The modular I/O allows a high degree of application flexibility: any combination of discrete inputs, discrete outputs, analog inputs, analog outputs, and pulse inputs can be accommodated, up to a maximum of 64 channels. This makes it possible to buy only the I/O needed for the immediate requirements of the application, while allowing field expansion or changes in the I/O later on.



ROC364 Master Controller Unit and I/O Module Rack

D301030X012

# Specification Sheet

## Master Controller Unit

The Master Controller Unit (MCU) is the key component of the ROC364 and consists of:

- ◆ NEC V25+ microprocessor with on-board memory.
- ◆ On-board memory.
- ◆ FlashPAC module.
- ◆ Connections for operator interface.
- ◆ Sockets for two optional communications cards.
- ◆ Status indicators and diagnostic inputs.

The NEC V25+ is a 16-bit CMOS microprocessor that can address up to one MB of memory space. The MCU comes standard with 128 KB of on-board, battery-backed, static random access memory (SRAM) for storing data and 32 KB of electrically-erasable read-only memory (EEPROM) for storing configuration parameters.

The FlashPAC module contains the operating system, ROC communications protocol, and applications firmware (see other specification sheets). The module provides additional RAM for user programs and history logs. The firmware in the module also provides 1992 AGA flow calculations. See the FlashPAC specifications sheet (2:MFP) for more information.

The ROC364 maintains an Audit trail per API Chapter 21.1.

The Local Operator Interface (LOI) port provides a means for a direct link between the ROC364 and a personal computer. With a personal computer running ROCLINK™ Software (see Specification Sheet 4:RLFW), the user can configure the ROC364 and monitor its operation.

The display port is dedicated to communications between the MCU and the Local Display Panel accessory (see Specification Sheet 2.2:LDP). Through this panel, the user can access information stored in the ROC364.

The communications card expansion sockets allow one or two communications cards to be added to the ROC364. The cards make use of the COM1 and COM2 ports and can be any of the ROC300-series communications cards (described under "Options").

Fuses for input and auxiliary power are readily accessible from the front of the MCU. Screw terminals, also located on the front, provide connections for input power and auxiliary output power. Auxiliary power outputs are switched by the MCU under software control and can be used for

auxiliary devices, such as a radio. The source of auxiliary power is the input power.

LED indicators display ROC status, input power, and auxiliary power. The ROC status indicator shows whether operation is normal. The power and auxiliary output indicators light to show that power is applied.

Diagnostic inputs are provided for monitoring conditions, such as board temperature, input power voltage, and transmitter supply voltage.

The MCU has a metal case that helps protect the electronics from physical damage. For protection from outdoor environments, the unit must be housed in a ROC enclosure (see respective specification sheets).

## Options

A complete ROC364 consists of a Master Controller Unit and a variety of options. The name and the quantity of each option that can be accommodated is shown in Table 1.

Table 1. ROC364 Options

Option	Quantity
Module Rack, 16 socket	1, 2, 3, or 4
Backplate	0 or 1
I/O Power Converter Card	0 or 1
I/O Modules	0 to 64
Communication Cards	0, 1, or 2

The **Module Rack** provides sockets for up to 16 I/O modules. A minimum of one Module Rack is required for any ROC364 connected to field I/O. Up to four Module Racks can be used with one MCU. The first Module Rack plugs directly into the MCU. Additional racks plug into the previous rack.

The **Backplate** provides a mounting panel for a MCU and Module Racks. Various backplates are available for accommodating one, two, or four Module Racks. The four-rack backplate is used for either three or four racks.

The **I/O Power Converter Card** converts the MCU input power from 12 volts to 24 volts (nominal) for field transmitters. The converter, which is required only for 12-volt input voltage, can accommodate up to 25 transmitter loops at 20 milliAmps each.

(Continued on Page 4)

# Specification Sheet

## Specifications

<p><b>PROCESSOR MEMORY</b> NEC V25+ running at 8 MHz.</p> <p><b>On-Board:</b> 128 KB battery-backed SRAM for data. 32 KB EEPROM for configuration.</p> <p><b>FlashPAC:</b> Plug-in module with 512 KB Flash read-only memory (ROM) and 512 KB of battery-backed static RAM (SRAM).</p> <p><b>Memory Reset:</b> Optional LDP permits a cold start initialization when used during power-up.</p> <p><b>I/O CAPACITY</b> Up to 16 I/O channels per Module Rack. Up to 4 Module Racks (64 I/O channels) per MCU.</p> <p><b>OPERATOR INTERFACE PORT</b> EIA-232D (RS-232D) serial format for use with portable operator interface. Baud is selectable from 300 to 19,200 bps. Asynchronous format, 7 or 8-bit (software selectable). Parity can be odd, even, or none (software selectable). 9-pin, female D-shell connector provided.</p> <p><b>TIME FUNCTIONS</b> <b>Clock Type:</b> 32 kHz crystal oscillator with regulated supply, battery-backed. Year/Month/Day and Hour/Minute/Second. <b>Clock Accuracy:</b> 0.01%. <b>Watchdog Timer:</b> Hardware monitor expires after 1.2 seconds and resets the processor. Processor restart is automatic.</p> <p><b>DIAGNOSTICS</b> These values are monitored: real-time clock/system clock compare, AI module mid-scale voltage, DI module default status, AO module D/A voltage, DO module latch value, I/O transmitter voltage, power input voltage, MCU board temperature.</p> <p><b>POWER REQUIREMENTS</b> 11 to 16 V dc (12.5 V to start up) or 22 to 30 V dc (25 V to start up), jumper selectable. 1 Watt typical, excluding I/O power.</p> <p><b>AUXILIARY OUTPUT POWER</b> Input power is software switched to two sets of auxiliary output power terminals. Each output fused for 5 A maximum. Output voltage is 0 to 2 V dc less than input voltage, depending on load.</p>	<p><b>I/O POWER CONVERTER (OPTIONAL)</b></p> <p><b>Input:</b> 11 to 16 V dc, 15 mA with no load or shorted output. <b>Output:</b> 22 to 24 V dc, up to 0.6 A for transmitter power.</p> <p><b>ENVIRONMENTAL</b></p> <p><b>Operating Temperature:</b> -40° to 70°C (-40° to 158°F). <b>Storage Temperature:</b> -50° to 85°C (-58° to 185°F). <b>Operating Humidity:</b> To 95%, non-condensing. <b>Transient Protection:</b> Meets IEEE C37.90.1-1989. <b>EMI Immunity:</b> Meets EN61000-4-5 Performance Criterion B for Industrial Locations. <b>EMI Emissions:</b> Meets FCC 47 CFR, Part 15, Subpart J, Class A verified.</p> <p><b>DIMENSIONS</b></p> <p><b>MCU:</b> 51 mm D by 203 mm H by 305 mm W (2 in. D by 8 in. H by 12 in. W). Add 38 mm (1.5 in.) to depth dimension for memory modules. <b>Module Rack:</b> 13 mm D by 127 mm H by 305 mm D (0.5 in. D by 5 in. H by 12 in. W). <b>MCU w/one Module Rack:</b> 311 mm W by 356 mm H (12.25 in. W by 14 in. H). <b>MCU w/two Module Racks:</b> 311 mm W by 565 mm H (12.25 in. W by 22.25 in. H). <b>MCU w/three or four Module Racks:</b> 311 mm W by 743 mm H (12.25 in. W by 29.25 in. H).</p> <p><b>WEIGHT</b></p> <p><b>MCU:</b> 2.3 kg (5 lbs) nominal. <b>Module Rack:</b> 0.5 kg (1 lb) nominal. <b>Backplate:</b> 1.4 to 3 kg (3 to 6.5 lbs).</p> <p><b>ENCLOSURE</b> MCU metal chassis with 2-piece cover and Module Rack case meet NEMA 1 rating.</p> <p><b>BACKPLATE</b> 16 gauge steel.</p> <p><b>APPROVALS</b> Approved by CSA for hazardous locations Class I, Division 2, Groups A, B, C, and D.</p>
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# Specification Sheet

(Continued from Page 2)

**I/O modules** can be added as needed to satisfy a wide variety of field I/O requirements. The types of modules (see respective specification sheets) that can be used are:

- ◆ Analog input (loop, differential, or source).
- ◆ Analog output.
- ◆ Discrete input (source or isolated).
- ◆ Discrete output (source or isolated).
- ◆ Pulse input (normal, slow, or low-level).
- ◆ Relay output.
- ◆ RTD input.
- ◆ HART® interface.
- ◆ Serial I/O module (RS-232 or RS-485).

**Communication cards** provide the means for communicating with a host computer or other device. One or two cards of the following types in any combination can be accommodated (see

Specification Sheets 2:COM1, 2:COM2, and 2.5:RMI):

- ◆ EIA-232 (RS-232) for point-to-point asynchronous serial communications.
- ◆ EIA-422/EIA-485 (RS-422/RS-485) for multiple-point asynchronous serial communications.
- ◆ Dual Communications (RMI) for sensor to ROC communications.
- ◆ Radio modem for communications to a radio.
- ◆ Leased line modem for communications over customer-owned or leased lines.
- ◆ Dial-up modem for communications over a telephone network.

## Accessories

A number of accessory items are available for the ROC364 that provide environmental housing, power, communications, local monitoring, and I/O lightning protection. These items are described in other specification sheets. See your local sales representative for more information.

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